U. S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Ostodes strigatus*

COMMON NAME: Sisi

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: September 2005

STATUS/ACTION:

____ Initial 12-month Petition Finding:
- ____ not warranted
- ____ warranted
- ____ warranted but precluded (also complete (c) and (d) in section on petitioned candidate species- why action is precluded)

____ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

___ New candidate

X Continuing candidate
- _____ Non-petitioned
- _X__ Petitioned - Date petition received: May 11, 2004
  - ___ 90-day positive - FR date: ___
  - _X_ 12-month warranted but precluded - FR date: May 11, 2005
  - N Is the petition requesting a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES (also complete c and d for initial 12-month petition findings):

a. Is listing warranted (if yes, see summary of threats below)? Yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.

We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions . During the past 12 months, most of our national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).

___ Listing priority change
Former LP: ___
New LP: ___

Date when the species first became a Candidate (as currently defined): November 15, 1994

___ Candidate removal: Former LP: ___

___ A - Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

___ F - Range is no longer a U.S. territory.

___ M - Taxon mistakenly included in past notice of review.

___ N - Taxon may not meet the Act's definition of "species."

___ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Snails; Family Potaridae (snail)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: American Samoa (island of Tutuila)

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: American Samoa (island of Tutuila)

LAND OWNERSHIP

Land ownership in American Samoa generally follows a historic village tradition. Large sections of land around each village are controlled by that village for the use by the village residents. The Maloata population of the sisi snail is within the bounds of Maloata Village.

LEAD REGION CONTACT: Paul Phifer (503) 872-2823, paul_phifer@fws.gov

LEAD FIELD OFFICE CONTACT: Pacific Islands Fish and Wildlife Office, Lorena Wada (808) 792-9400, lorena_wada@fws.gov

BIOLOGICAL INFORMATION:

Species Description: *Ostodes strigatus* is a mesogastropod in the superfamily Cycclophoroidea and the family Poteriidae (Vaught 1989). It has a white planispiral shell with distinctive parallel ridges and a multispiral operculum (Abbott 1989). The sisi snail is a ground-dwelling snail that feeds on decaying leaf litter and fungus (Girardi 1978). It is likely that they deposit eggs into leaf litter where they develop and hatch.

Taxonomy: The sisi snail is a member of the family Potaridae, which occurs through tropical Central and South America. The genus *Ostodes* and *Gassiesia* are confined to the islands of the South Pacific. All members of the family are ground-dwelling snails (Girardi 1978; Abbott 1989). Girardi's 1978 taxonomic write up is the most recent and accepted taxonomy for this species.

Habitat: The sisi snail is found on the ground in rocky areas at lower elevations. The vegetation is characterized by a relatively closed canopy with light understory plant coverage. While these areas receive moderate to high rainfall, they are more open and dryer than the wet forests found at higher elevation or along the northern sections of coastline (Miller 1993).

Historic and Current Range/Distribution: During a survey of snails in American Samoa (Miller 1993), fewer than 50 live snails were seen; all of these were in Maloata Valley (37-122 meters (m) (121-400 feet (ft) elevation) on the western end of the island of Tutuila, American Samoa. The snails were found to be highly scattered in the leaf litter on the forest floor under an intact canopy of 10-15 m (32-49 ft) above the ground. Several live predatory snails, *Euglandina rosea*, were found in the same area, and the ground was littered with the shells of dead *Ostodes strigatus*. Shells of dead sisi snail were found at four of the survey sites including the site with live sisi snails visited on the island of Tutuila, American Samoa. A total of eight sites were surveyed for snails.

Very little data can be used to assess long-term temporal changes in the snail fauna of American Samoa. However, qualitative comparisons can be made between a 1993 survey (Miller 1993) and surveys conducted in 1975 (Solem 1975; Christensen 1980). Of the 15 endemic species recorded alive in 1975, living individuals of five species and the shells of two additional species were seen in 1993. This qualitative comparison plus the more recent survey data indicate that the native snail fauna has declined dramatically.

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. The declines of the native snails in American Samoa have resulted, in part, from significant loss of native habitat to forestry and agriculture and loss of native forest structure to hurricanes and alien weeds that establish after these storms. These threats may interact to greatly exacerbate the loss of populations and species. All live sisi snails have been found in the leaf litter beneath remaining intact forest canopy. No snails were found in areas bordering agricultural plots or in forest areas that were severely damaged by three hurricanes (1987, 1990, and 1991) (Miller, 1993). Under natural historic conditions, loss of forest canopy to storms did not pose a great threat to the long term survival of these snails; enough intact forest with healthy populations of snails would support dispersal back into newly regrown canopy forest. However, the presence of alien weeds such as mile-a-minute vine (*Mikania micrantha*) and weedy tree species such as *Funtumia elastica*, may reduce the likelihood that native forest will re-establish in areas damaged by the hurricanes (Whistler 1992). This loss of habitat to storms is greatly exacerbated by an expanding agriculture needed to support one of the world's highest human population growth rates (Craig *et al*. 1993). Agricultural plots have spread from low elevation up to middle and some high elevations on all the islands, greatly reducing the forest area and thus reducing the resilience of native forests and its populations of native snails. These reductions also increase the likelihood that future storms will lead to the extinction of populations or species that rely on the remaining canopy forest.

No conservation measures have been taken to address these threats for this species.

B. Over-utilization for commercial, recreational, scientific, or educational purposes.
These snails are not known to be currently subjected to use by humans.

C. Disease or predation.
At present, the major threat to long-term survival of the native snail fauna in American Samoa is predation by *Euglandina rosea,* the most commonly recommended biological control agent of the giant African snail. The lack of evidence for using predators for control of the giant African snail has not stopped the intentional spread of snail predators like *E. rosea* into and throughout the Pacific basin, although numerous studies show that *E. rosea* feeds on endemic island snails and is a major agent in their declines and extinctions (van der Schalie 1969; Hart 1978; Hadfield and Mountain 1981; Howarth 1983, 1985, 1991; Clarke *et al*. 1984; Pointier and Blanc 1984; Hadfield 1986; Murray *et al*. 1988; Hadfield *et al*. 1989, 1993; Kinzie 1992).

Euglandina rosea is also a host to the rat lung worm, a parasite, and occupies a wider range of habitats than does the giant African snail (Mead 1961; van der Schalie 1969), potentially spreading the rat lung worm through a wider area. It is not known if the parasite can be maintained in populations of native snails or if a parasite load would have negative effects on snail reproduction.

No conservation efforts have been undertaken to address these threats for this species.

D. The inadequacy of existing regulatory mechanisms.
Currently, no formal or informal protection is given to *Ostodes strigatus* by the Federal or American Samoa governments or by private individuals or groups.

E. Other natural or manmade factors affecting its continued existence.
Even if the threats responsible for the decline of this species were controlled, the persistence of existing populations is hampered by the small number of extant populations and the small geographic range of the known populations. This circumstance makes the species more vulnerable to extinction due to a variety of natural processes. Small populations are particularly vulnerable to reduced reproductive vigor caused by inbreeding depression, and they may suffer a loss of genetic variability over time due to random genetic drift, resulting in decreased evolutionary potential and ability to cope with environmental change (Lande 1988; Center for Conservation Update 1994). Random environmental events, like severe storms, can affect the continued existence of the sisi snail due to the small numbers of populations and individuals that remain.

SUMMARY OF THREATS:

The greatest threats to the sisi snail are loss of habitat and predatory nonnative snails, particularly *Euglandina rosea*. There are no efforts being undertaken to address these threats for this species.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

There are no additional conservation activities to report.

LISTING PRIORITY:

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	**Imminent**	Monotypic genus	1
		Species	**2 ***
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude:

The sisi snail is highly threatened throughout its limited range by habitat loss and modification and by predation from nonnative predatory snails. These threats occur range-wide and there are no efforts being done to control or eradicate nonnative snails or to stop the loss of habitat. The small number of individuals and the small number of populations also make this species very susceptible to the negative effects of stochastic events such as hurricanes and storms.

Imminence:

Threats to the sisi snail from habitat loss and predation by *Euglandina rosea* are imminent due to the on-going nature of them.

Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? yes

Is Emergency Listing Warranted?

No. The species does not appear to be appropriate for emergency listing at this time because the immediacy of the threats is not so great as to imperil a significant proportion of the taxon within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of *Ostodes strigatus* as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

DESCRIPTION OF MONITORING:

We conducted literature searches for recent articles on this species and contacted relevant species experts, University of Guam and University of Hawaii researchers regarding the current status of this species. No additional information on the species' status was found. However, the existing data regarding the species' status was verified.

This level of monitoring is appropriate to update the status of the species because a thorough literature search was conducted as well as relevant species experts contacted. Information contained in this assessment form was verified and any updated information incorporated. This species is not listed in the International Union for Conservation of Nature and Natural Resources Red Data List database (International Union for Conservation of Nature and Natural Resources database 2004).

List of Experts Contacted:

Name	Date	Place of Employment
Barry Smith	July 11, 2005	University of Guam
Robert Cowie	July 11, 2005	University of Hawaii
Fred Amidon	July 11, 2005	U.S. Fish and Wildlife Service
Holly Freifeld	July 11, 2005	U.S. Fish and Wildlife Service
Ray Tulafono	Sept 26, 2005	American Samoa Dept. of Marine & Wildlife Resources

List of Databases Searched:

Name	Date
International Union for Conservation of Nature and Natural Resources	2004

COORDINATION WITH STATES:

We contacted American Samoa Department of Marine and Wildlife Resources by email with a request for any information on the species and sent copies of our candidate forms. No response was received.

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: Acting _____ 11/16/05
Regional Director, Fish and Wildlife Service Date

_____

Concur: _____ August 23, 2006
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Date of annual review: 7/26/05
Conducted by: Lorena Wada, Pacific Islands FWO

Comments:

PIFWO Review
Reviewed by: Gina Shultz Date: 10/12/05
Assistant Field Supervisor, Endangered Species

Patrick Leonard Date: 10/11/05
Field Supervisor